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STATUS OF AND NEED FOR TECHNICAL-INSTITUTE PROGRAMS IN THE PUBLIC JUNIOR COLLEGE.

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THE DATA SOURCES WERE (1) A QUESTIONNAIRE MAILED TO ALL PUBLIC JUNIOR COLLEGES LISTED IN THE 11TH EDITION OF THE "COLLEGE BLUE BOOK," (2) CATALOGS AND BULLETINS OF SELECTED COLLEGES, AND (3) LITERATURE IN THE FILED. A 52-PERCENT RESPONSE INDICATED THAT 70.7 PERCENT OF THE INSTITUTIONS OFFERED TECHNICAL INSTITUTE CURRICULUMS IN 1956, AN INCREASE OF 134 PERCENT IN THE DECADE, AS COMPARED WITH A 45-PERCENT GROWTH IN NUMBERS OF JUNIOR COLLEGES. THE DEMAND FOR BETTER EDUCATED AND MORE HIGHLY SKILLED MANPOWER WAS BASED ON THE FACTORS MOST FREQUENTLY CITED--(1) INTEREST IN INDUSTRY, (2) INTEREST IN STUDENTS, AND (3) STATE OR FEDERAL FINANCIAL AID. THE MOST EVIDENT PROBLEM WAS THE LACK OF EFFECTIVE VOCATIONAL COUNSELING. LOSS OF CREDIT WHEN TRANSFERRING TO OTHER CURRICULUMS WAS ANOTHER DETERRENT. NINETY PERCENT OF THE INSTITUTIONS REPORTING INDICATED THAT GENERAL EDUCATION COMPRISED ABOUT ONE-FOURTH OF THEIR TECHNICAL INSTITUTE CURRICULUMS. IT WAS CONCLUDED THAT NEED FOR PERSONNEL TRAINED AT THIS LEVEL HAS INCREASED AND THAT THE TECHNICAL INSTITUTE PROGRAM OF THE JUNIOR COLLEGE WILL CONTINUE ITS GROWTH. THIS REPORT IS A SUMMARY OF A MASTER'S THESIS SUBMITTED TO THE GRADUATE SCHOOL OF NORTHWESTERN STATE COLLEGE, 1966. (JP)

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by

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INFORMATION

A summary report of a thesis by the same title submitted by the writer in partial fulfillment of the requirements for the degree of Master of Science in Education in the Graduate School of Northwestern State College, 1966.

Issued by the

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by

Nathaniel D. Smith

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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PREFACE

Unless curricula in educational institutions are constantly examined for the purpose of affecting revisions in keeping with the needs of youth we will be training for "yesterday" instead of for "tomorrow." This is especially true in technical education.

With the passage of Federal legislation supporting technical education, it becomes imperative to examine the status of such programs. Obviously, it would be an insurmountable task to examine all facets of technical education in a brief report.

Much emphasis is being placed on the two-year college technician program in junior colleges and four-year institutions, and even in the technical institutes carrying non-college credit. The accelerated expansion of this work has been the direct result of industries' need for employees with such training.

Reported in this study are the results of a nation-wide survey of over 200 public junior colleges offering technical institute curricula in 1966. It is felt that such data will be helpful both to teachers and administrators interested in technical training.

Walter J. Robinson
Head, Department of
Industrial Education

TABLE OF CONTENTS

	PAGE
Purpose of the Study	1
Delimitation of the Study	2
Definition of Terms	3
Sources of the Data	4
Extent of Technical-institute Programs Offered by the Responding Junior Colleges	5
Technical-institute Offerings from 1956 to 1966	7
Factors Affecting the Development of Technical-institute Programs	9
Difficulties Frequently Encountered in Technical-institute Programs	10
Policies Regarding the Transfer of Credit Earned in Technical-institute Curricula	12
Entrance Requirements Reported for Technical-institute Curricula	14
Keeping Technical-institute Programs Correlated with Employment Needs	15
Emphasis on General Education Studies as Part of the Technical-institute Curricula offered by the Institutions Reporting	17
Overview of Curricula Status	20
Enrollment by Departments Offering Technical-institute Curricula	20
Reported Percentage of Enrollment Engaged in Technical-institute Curricula	22
Nature of the Technical-institute Curricula Offered	23
Curricula Offered in Research, Design, and Development Occupations	24
Curricula Offered in Manufacturing Production Occupations	25
Curricula Offered in Construction and Installation Occupations	26
Curricula Offered in Marketing Technical Products	27
Curricula Offered in Operation and Control Occupations	28
Curricula Offered in Maintenance and Inspection Occupations	29
Curricula Offered in Medical and Health Service Occupations	30
Curricula Offered in Business and Commerce Occupations	31
Curricula Offered in Agriculture Related Occupations	32
Curricula Offered in Government Related Occupations	33
Increasing the Prestige of Technical-institute Programs	34
Financial Support For Technical-institute Curricula	35
Summary	38
Conclusions	42

LIST OF TABLES

TABLE		PAGE
1.	Extent of Technical-institute Programs Offered by Responding Junior Colleges	6
2.	Increases in the Public Junior College and its Technical-institute Offerings from 1956 to 1966	8
3.	Comparative Ranking by Respondents of Factors Affecting Development of Technical-institute Programs	9
4.	Comparative Ranking of Difficulties Frequently Encountered in Technical-institute Programs	11
5.	Policies Reported with Regard to the Transfer of Credit Earned in Technical-institute Curricula	13
6.	Entrance Requirements Reported for Technical-institute Curricula	15
7.	Methods Used to Keep Technical-institute Programs Correlated with Employment Needs	16
8.	Per Cent of Technical-institute Curricula Devoted to General Education Courses	18
9.	Comparison of General Education Courses Taught in Technical-institute Curricula with Those Taught in Transfer Programs	19
10.	Overview of Curricula Status	20
11.	Enrollment by Departments Offering Technical-Institute Curricula	21
12.	Reported Percentage of Enrollment Engaged in Technical-institute Curricula	23
13.	Group One: Curricula Offered in Research, Design, and Development Occupations	24
14.	Group Two: Curricula Offered in Manufacturing Production Occupations	25
15.	Group Three: Curricula Offered in Construction and Installation Occupations	26
16.	Group Four: Curricula Offered in Marketing Technical Products	27
17.	Group Five: Curricula Offered in Operation and Control Occupations	28
18.	Group Six: Curricula Offered in Maintenance and Inspection Occupations	29
19.	Group Seven: Curricula Offered in Medical and Health Services Occupations	30
20.	Group Eight: Curricula Offered in Business and Commerce Occupations	31
21.	Group Nine: Curricula Offered in Agriculture Related Occupations	32
22.	Group Ten: Curricula Offered in Government Related Occupations	33
23.	Practices Related to the Prestige of Technical-institute Programs	34
24.	Sources of Financial Support for Technical-institute Curricula	36
25.	Financial Reimbursement from State and Federal Aid to Technical Education	37

PURPOSE OF THE STUDY

This study was undertaken for the purpose of ascertaining the status of, and need for, technical-institute type programs in the public junior colleges as well as provide a summary of historical circumstances relevant to an understanding of the existent position of technical education with relation to composite American education; more specifically, the objective was to gather information which would help to answer the following questions:

a) What historical developments accounted for the debilities of American education in the field of technician training?

b) What conditions were prompting the seemingly urgent interest in this field?

c) What was the potential of the public junior college in providing educational programs for technician training?

d) What was the extent to which technical-institute programs were being offered in the public junior college?

e) What had been the growth rate of such programs in the past decade?

f) What factors were most commonly cited as contributing to the development of such programs?

g) What difficulties were most frequently encountered in such programs in the public junior colleges?

h) What positions were being taken with regard to the transfer of credit earned in the technical-institute programs?

i) What methods were being employed to keep technical-institute offerings correlated with present employment needs?

j) What positions were being taken with regard to general education requirements in technical-institute programs?

k) What was the nature of the technical-institute programs being offered in the public junior colleges?

l) What efforts were being made to contribute to the prestige of technical-institute type programs?

m) What sources of financial support were technical-institute programs in the public junior colleges making use of?

DELIMITATION OF THE STUDY

This study was limited in that the investigation was primarily directed toward those programs defined for the purposes of the study as technical-institute programs. It was further limited in that it applied only to those institutions defined as public junior college and which were located within the United States.

DEFINITION OF TERMS

The following terms were defined to insure a better understanding of the study:

a) Public junior college: A post-secondary education institution offering programs either of a terminal nature or as preparation for further training in college or university. Its control is vested in a public board which may be elected or appointed by the governor or other public official.

b) Technical Institute: An institution or a division of an institution of higher learning offering instruction in one or more branches of technology frequently leading to an associate degree.

c) Technical-institute type programs: Programs of the intermediate strata of technological curricula which are from one to three years duration beyond the secondary level. Such curricula are technological in nature, and they differ in both content and purpose from those of the vocational trade school and the engineering college. Such

curricula emphasize the understanding of basic principles of mathematics and science, rather than the acquisition of manual skills. High school graduation is required for admission, and mathematics through algebra and geometry usually are prerequisite. The programs of instruction are similar in nature too, but briefer and more completely technical in content than professional curricula. The major purpose is to prepare individuals for various technical positions in specialized areas of activity

Although there were differences of opinion on fine points of definition, there seemed to be uniform agreement upon the following:

1. They are post-secondary.
2. They are essentially terminal.
3. They are related to the fields of science and technology.
4. They offer intensive instruction in a brief period.
5. They lay heavy emphasis upon application.

d) Terminal vocational-technical education: Good defines "terminal education" as programs of college education that are completed in less than four years and do not lead to the baccalaureate degree, and "vocational technical education" as training below college grade intended to prepare the student to earn a living in an occupation in which success is dependent largely upon technical information and understanding of the laws of science and technology.

So the combination of "terminal vocation-technical education" could be interpretated to mean any education of a technical occupational nature offered at any institutional level which does not lead to the baccalaureate degree. But for this study "terminal vocational-technical education" shall be understood to apply only to that area of occupational education that has been defined as "technical-institute type programs."

e) Technician: (1) A worker on a level between the skilled trade worker and the professional engineer; his technical knowledge permits him to perform many of the duties formerly assigned to the graduate engineer; he may design the mechanism, compute the cost, write the specifications, organize the production, and test the finished product. (2) A general term applied to an individual who assists with technical details in a trade or profession. Such a person may use tools, instruments, or special devices to design, illustrate, fabricate, maintain, operate, and test objects, materials, or equipment. He may perform mathematical and scientific operations reporting on and carrying out a prescribed action in relation to them. He may examine and evaluate plans, designs, and data, determining action to be taken on the basis of such analysis. He assists in determining or interpreting work procedures and maintaining harmonious relations among groups of workers.

SOURCES OF THE DATA

Data for this study were secured from the following primary sources:

a) Response to a questionnaire mailed to four hundred and twenty-five public junior colleges, the list including all public junior colleges of the United States as listed in the first volume of the eleventh edition of the College Blue Book by Christian E. Burckel.

b) Catalogues and bulletins of selected colleges referred to in the literature as offering outstanding technical-institute programs.

c) Literature in the fields of vocational and technical education, the technical-institute, and the junior college that spanned the period of approximately a decade between the mid 1950's and the mid 1960's.

Extent of Technical-institute Programs Offered by the Responding Junior Colleges

Data for this study were obtained from responses supplied from questionnaires sent to public junior colleges located within the United States. The data will be presented primarily by means of tables, supplemented by discussion and comments.

The number of institutions involved in the survey and the nature of the response was as follows:

a) Total number of public junior colleges included 400

b) Total number of replies received 221

c) Total number of usable returns received 208

Of the total number of institutions replying, three had been discontinued, four had recently become four year colleges, and six replies were not sufficiently completed. This resulted in a total of 208 usable questionnaires, or a 52 per cent return from the total survey, on which the data were based.

The data presented in Table 1 reveals that of the 208 public junior colleges responding 147, or 70.7 per cent, offered technical-institute curricula in 1966.

Of the respondents fifty, or 24.0 per cent, had offered such

programs in 1956, whereas ninety-seven, or 46.7 per cent, had begun such offerings since 1956.

Twenty respondents, or 9.6 per cent of the total responding, were in various stages of planning to offer technical-institute curricula in the near future. When this group was combined with the ninety-seven institutions which had begun programs since 1956 and this total was compared to the fifty institutions already offering programs in 1956, the data revealed a 134 per cent increase in the number of public junior colleges offering technical-institute curricula during this ten-year period.

Sixty-one, or 29.3 per cent, of the total respondents indicated that their institution did not offer technical-institute curricula; and of these, forty-one had no plans to offer such curricula in the near future.

TABLE 1

EXTENT OF TECHNICAL-INSTITUTE PROGRAMS OFFERED BY RESPONDING JUNIOR COLLEGES

	Total number of usable replies	Number offering technical curricula in 1966	Number that did not offer technical curricula in 1966	Number that began technical curricula before 1956	Number that began technical curricula after 1956	Number that did not offer technical curricula but planned to begin
Number	208	147	61	50	97	20
Per cent of total usable replies	100	70.7	29.3	24.0	46.7	9.6

Increases in the Public Junior College and Its Technical-Institute Offerings From 1956 to 1966

Table 2 presents data related to the growth of the public junior college and its technical-institute offerings in the decade from 1956 to 1966. A study conducted by Richards[1] in 1956 revealed that 44.6 per cent of the accredited junior colleges, both public and private, offered technical-institute curricula. This percentage when projected to the 314 public junior colleges that existed at that time indicates that approximately 140 public junior colleges offered technical-institute curricula in 1956. Although this would not be an absolute figure, it would be a fair index to the situation at that time.

Based on the 52 per cent return from the 400 forms used in this study, 70.7 per cent of the public junior colleges offered technical-institute curricula in 1966. This percentage when projected to the 456 public junior colleges that existed at that time indicates that 322 of these institutions offered technical-institute curricula in 1966. A comparison of these figures reveals an expansion of approximately 140 to 322 public junior colleges offering technical-institute curricula in the period from 1956 to 1966, or a 130 per cent increase in this ten-year period. This percentage, though approximate in nature and arrived at through a different approach, tends to collaborate the finding from the data of the present study alone, which reveals an increase of 134 per cent in public junior colleges offering technical-institute curricula

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[1] Maxwell J. Richards, "Analysis of the Technical Education Provided by the Accredited Junior Colleges," Junior College Journal, 28 (October, 1957), 106.

during this same ten-year period.

The above information, while based on projection from a 32 per cent sample, should present a fairly accurate indication of the expansion of technical-institute programs being offered by the public junior colleges. A conservative interpretation of the data indicated that the number of public junior colleges offering technical-institute curricula had doubled in the decade from 1956 to 1966 and that approximately two-thirds of such institutions were offering these curricula in the mid 1960's.

As shown by the figures in Table 2, the number of public junior colleges increased from 314 to 456, or 45.0 per cent, in this same ten-year period.

TABLE 2

INCREASES IN THE PUBLIC JUNIOR COLLEGE AND ITS TECHNICAL-INSTITUTE OFFERINGS FROM 1956 TO 1966

	Total number of public junior colleges	Lowest whole number comparisons	Number of institutions offering technical curricula[a]	Lowest whole number comparisons
In 1956	314	2	140	4
In 1966	456	3	322	9
Per cent increase since 1956	45	45	130	130

[a]Numbers based on percentage projections from limited samplings and thus only approximately accurate.

Factors Affecting the Development of
Technical-institute Programs

Table 3 presents the data related to this area of inquiry. Thirteen factors are presented in descending order of importance as indicated by the response of the 147 institutions reporting.

TABLE 3

CUMULATIVE RANKING BY RESPONDENTS OF FACTORS AFFECTING DEVELOPMENT OF TECHNICAL-INSTITUTE PROGRAMS

Factors That Were Ranked	Number of times ranked in top five positions					Total number of times ranked	Final rank order of factor
	1	2	3	4	5		
Interest indicated by local industry	67	24	12	5	1	114	1
Result of local occupational surveys	12	11	17	9	11	94	2
Interest indicated by students	16	22	28	12	5	85	3
State financial support was available	4	10	17	14	6	70	4
Federal financial support was available	6	6	4	15	16	63	5
Result of state occupational surveys	7	6	14	11	18	57	6
Interest indicated by local civic group	2	19	11	8	3	45	7
Result of national occupational surveys	5	4	13	9	7	44	8
Interest indicated by faculty	5	9	9	8	4	37	9
Instructors were available	1	2	2	5	9	36	10
Local financial support was available	1	4	6	6	6	34	11
Department could handle more students	-	2	1	2	2	15	12
Institution needed more enrollment	-	-	2	-	3	11	13

The respondents were presented with a list of possible factors that might have affected the decision to offer technical-institute curricula in their institution. They were given an opportunity to include additional factors and were asked to rank all factors in order of considered importance.

Interest indicated by local industry was reported most often as the most important factor contributing to the development of such programs. The results of local occupational surveys was cited as the second most important factor contributing to the establishment of such programs. Interest indicated by students was reported as the third most important factor, with the availability of state financial support rated fourth and so on as shown in Table 3.

Difficulties Frequently Encountered in Technical-Institute Programs

In Table 4 eleven difficulties are ranked in descending order of importance as indicated by a tabulation of the responses. The total number of times each difficulty was reported is also shown in this table along with the number of times such difficulty was thought to be the first, second, third, fourth, or fifth most important problem frequently encountered in the field of technical-institute education.

Lack of effective vocational counseling was cited most frequently as the major problem in this area. In fact this difficulty was ranked as the number one problem almost two-thirds as many times as all the other problems combined. This indicated an urgent need for more and

TABLE 4

COMPARATIVE RANKING OF DIFFICULTIES FREQUENTLY ENCOUNTERED IN TECHNICAL-INSTITUTE PROGRAMS

Difficulties That Were Ranked	Number of times ranked in top five positions					Total number of times ranked	Final rank order of diffic.
	1	2	3	4	5		
Lack of effective vocational counseling for entering students	65	16	18	9	2	109	1
Parent opposition to enrollment in terminal curricula	17	32	20	8	2	80	2
Loss of credit in event of transfer to baccalaureate degree curricula	6	15	11	14	9	65	3
Lack of public distinction between vocational-trade and technical curricula	9	25	11	10	7	62	4
Availability of qualified staff	11	15	14	5	8	60	5
The continuing high cost for each individual student served	12	8	11	11	18	56	6
Programs do not rate well socially with transfer curricula	11	5	12	9	7	51	7
Fear of lowering academic standards of the institution	3	9	9	8	4	37	8
Inability to offer broader choice of technical-institute curricula	5	6	7	3	6	34	9
The availability of adequate physical facilities	9	3	-	3	3	20	10
Quality of instruction given	-	-	-	1	1	6	11

better vocational information in the field of technical education on both the secondary and post-secondary levels. Parent opposition to enrollment in terminal curricula was the second most frequently reported difficulty encountered. Here again more adequate information and realistic counseling was perhaps implied. Loss of credit in the event of transfer to baccalaureate curricula was the third most frequently cited difficulty. The importance attached to this problem tends to substantiate the claim by some educators that as the field of work has become more and more like education itself there is a need to revaluate the traditional system of credit assignment for learning. Lack of public distinction between vocational-trade and technical-institute curricula was the fourth most frequently reported difficulty. The ranking of the remaining problems in this area may be studied in Table 4.

Policies Regarding the Transfer of Credit Earned in Technical-institute Curricula

Table 5 presents data related to this particular area of inquiry. Respondents were provided with a list of possible positions that might be taken with regard to the question of credit transfer from technical-institute programs to other programs. Each was requested to select from the list those policies that were in effect at his particular college and was given the opportunity to add such policies as might not be covered by the list provided.

The policies indicated by the respondents who offered technical-institute curricula are shown in Table 5 in the order in which they

TABLE 5

POLICIES REPORTED WITH REGARD TO THE TRANSFER OF CREDIT EARNED IN TECHNICAL-INSTITUTE CURRICULA

Policies of the Institutions Reporting	Number of institutions reporting policy	Rank order of policy
Part of the credit earned in technology courses of the technical-institute curricula were transferable to related baccalaureate curricula, in the same occupational field, offered at the given institution reporting.	64	1
Agreement had been reached with some neighboring colleges, or universities, to allow technical-institute graduates to enter related baccalaureate curricula with partial credit.	53	2
All credits earned in communication arts were transferable to any baccalaureate curricula offered at the reporting institution.	47	3
Agreement had been reached with some neighboring colleges, or universities, to allow technical-institute graduates to enter related baccalaureate curricula with full credit.	43	4
All credits earned in the basic sciences were transferable to any baccalaureate curricula offered at the reporting institution.	34	5
All credits earned in a technical-institute curricula were transferable to related baccalaureate curricula in the same occupational field, offered at the reporting institution.	17	6
None of the credits earned in technical-institute curricula were transferable to baccalaureate degree curricula offered at the reporting institution.	16	7

were most frequently reported. Naturally most institutions indicated that more than one of these positions was taken by their college, with the exception, of course, of those institutions that allowed all technical-institute credit to be transferable or none of these credits to be transferable. These two positions combined, however, accounted for only 12 per cent of the total positions taken on such policies.

Entrance Requirements Reported For Technical-institute Curricula

Table 6 provides data related to the entrance requirements that were reported for technical-institute curricula. Of the 147 institutions reporting they offered technical-institute curricula 122, or 83.0 per cent, required a high school diploma or its equivalent for entry into such programs. Fifty-two, or 35.4 per cent, required technical-institute students to meet the same requirements as students enrolling in "transfer" baccalaureate degree programs. There were thirty-seven, or 25.2 per cent, of the institutions which required a minimum age, usually eighteen years, for entry into such programs, whereas thirty-four, or 23.1 per cent, required the applicant to attain a certain score on an examination in his field of interest. Eighteen institutions required personal interviews with applicants for technical-institute curricula, and only five had no specific requirements.

Since the data revealed that 83.0 per cent of the institutions reporting technical-institute curricula required applicants for such curricula to possess a high school diploma or its equivalent for entry

it would seem the idea that such programs should be of a post-high-school nature was well established.

TABLE 6

ENTRANCE REQUIREMENTS REPORTED FOR TECHNICAL-INSTITUTE CURRICULA

Entrance Requirements Reported	Number of institutions reporting requirement	Per cent of total institutions offering programs
Applicants were required to have a high school diploma or its equivalent	122	83.0
Applicants had to meet same requirements as students enrolling in transfer programs	52	35.4
Applicants must have attained a minimum age level for eligibility	37	25.2
Applicants were required to pass an entrance examination	34	23.1
Applicants were required to have a personal interview	18	12.2
Institution had no specific requirements; programs were open to all who might profit from instruction given	5	3.3

Keeping Technical-institute Programs Correlated With Employment Needs

Table 7 presents the data related to this area of inquiry. Methods used in an effort to maintain a high correlation between programs offered and the employment needs of industry are presented in

TABLE 7

METHODS USED TO KEEP TECHNICAL-INSTITUTE PROGRAMS CORRELATED WITH EMPLOYMENT NEEDS

Methods Reported	Number reporting method	Per cent of total
Maintained an advisory committee with representation from both labor and management for each occupational field in which technical-institute curricula were offered.	113	77.0
Consideration was given to state surveys of technical manpower needs as well as local needs in developing technical-institute curricula.	103	70.0
Consult with local representatives of labor and management on proposed technical-institute curricula.	88	60.0
Efforts were made to inform local labor and management of technical-institute curricula being offered.	86	58.5
Conducted periodic occupational surveys of local technical manpower needs to determine curricula offerings.	84	57.0
Consideration was given to national surveys to technical manpower needs as well as local and state needs in developing technical-institute curricula.	73	49.6
Technical-institute curricula offerings were coordinated through the assistance of state planning to meet technical education needs throughout the state.	72	49.0
Maintained friendly, cooperative relations. between institution administrators and industrial administrators and labor leaders, but no committees.	54	36.7
Maintained an over-all advisory committee with representation from both labor and management for the entire vocational education program.	40	27.2
Used cooperative education plan in technical-institute curricula with full, or part-time, coordinator.	19	12.9

descending order of frequency with which they were reported. Shown also are the number of times each item was reported and the percentage this comprises of the total number of institutions reporting they offered technical-institute curricula.

Of the 147 institutions offering such programs 113, or 77.0 per cent, maintained an advisory committee in each field in which they offered technical-institute curricula. Such committees were composed or representatives from both labor and management.

Consideration of state as well as local needs as revealed by manpower surveys was the second most frequently cited factor in deciding what curricula to offer. Other factors may be studied as presented in Table 7.

Emphasis on General Education Studies as Part of the Technical-institute Curricula offered by the Institutions Reporting

Tables 8 and 9 present the data related to this area of inquiry. Table 8 shows information on the per cent of technical-institute curricula that was devoted to general education courses, while Table 9 shows comparisons made between general education courses offered as part of technical-institute curricula with those offered in the regular "transfer" or baccalaureate degree programs.

As shown in Table 8, ninety-four, or 64.0 per cent of the institutions reporting technical-institute curricula, indicated from 20 to 30 per cent of such curricula was devoted to general education studies, while thirty-nine, or 26.5 per cent, reported such courses comprised from 10 to 20 per cent of technical-institute curricula; and

fourteen, or 9.5 per cent, indicated that general education courses comprised less than 10 per cent of their technical-institute curricula.

One point cited in the literature was that the junior college provided a unique opportunity to incorporate general education into technical curricula. It appeared that this challenge was being met.

The comparison of general education courses offered in technical-institute curricula with such courses offered in transfer programs revealed that over 50 per cent of such courses were the same in both curricula areas and were taught by the same instructors in both programs. Other points of comparison between these courses may be seen in Table 9 where they are presented in descending order of the frequency with which they were reported.

TABLE 8

PER CENT OF TECHNICAL-INSTITUTE CURRICULA DEVOTED TO GENERAL EDUCATION COURSES

Percentage Groupings	Number reporting in this range	Per cent of total
General education courses comprised between 20 and 30 per cent of technical-institute curricula	94	64.0
General education courses comprised between 10 and 20 per cent of technical-institute curricula	39	26.5
General education courses comprised less than 10 per cent of technical-institute curricula offered	14	9.5
TOTALS	147	100.0

TABLE 9

COMPARISON OF GENERAL EDUCATION COURSES TAUGHT IN TECHNICAL-INSTITUTE CURRICULA WITH THOSE TAUGHT IN TRANSFER PROGRAMS

Points of Comparison Reported	Number reporting this item	Per cent of total
General education courses offered in technical-institute curricula were taught by same staff members as those offered in transfer programs.	83	56.5
General education courses offered in technical-institute curricula were identical in every way to those taught in regular transfer programs.	75	51.0
General education courses offered in technical-institute curricula were basically same courses as taught in transfer programs but with different emphasis.	34	23.1
General education courses offered in technical-institute curricula were the same as those in transfer programs but were grouped in different sections.	15	10.2
There was very little comparison between general education courses offered in the technical-institute curricula with those taught in transfer programs.	13	8.8
General education courses taught in technical-institute curricula were entirely different courses in every way to those offered in transfer programs.	12	8.2
General education courses offered in technical-institute curricula were very nearly the same as those offered in transfer programs but were assigned fewer credit hours.	11	7.5

Overview of Curricula Status

Table 10 provides information related to the number and expansion of technical-institute curricula in those institutions that offered such curricula at the time of this study. Of the 147 respondents offering technical-institute curricula in 1966, the number of such curricula offered by a single institution ranged from one to twenty-seven. The average number of curricula offered was five and one-third.

A hundred and thirty-six respondents, or 92.5 per cent, reported the number of curricula offered in this area by their institution had increased since 1956. Only 4.8 per cent report that their curricula offerings in this area had remained the same since 1956, while 2.7 per cent reported a decrease of such offerings.

TABLE 10

OVERVIEW OF CURRICULA STATUS

Number of respondents offering technical curricula in 1966	Range in number of curricula offered in 1966	Average number of curricula offered in 1966	Per cent of institutions increasing curricula since 1956	Per cent of institutions not increasing curricula since 1956	Per cent of institutions decreasing curricula since 1956
147	1 to 27	5.35	92.5	4.8	2.7

Enrollment by Departments Offering Technical-institute Curricula

Table 11 presents data related to the departments of the reporting public junior colleges that were offering technical-institute curricula as well as information on the enrollment in these departments.

TABLE 11

ENROLLMENT BY DEPARTMENTS OFFERING TECHNICAL-INSTITUTE CURRICULA

Departments under which technical-institute curricula were reported	Number of respondents offering technical-institute curricula under this department.	Per cent of total respondents offering technical-institute curricula under this department.	Smallest enrollment reported for a single institution under this department.	Largest enrollment reported for a single institution under this department.	Average enrollment of all respondents reporting technical-institute curricula under this department.	Total reported enrollment in technical-institute curricula offered under this department.	Per cent the enrollment in each department comprises of the total enrollment reported in all technical-institute curricula.
Agriculture	27	13	7	350	98	1,592	2.3
Architecture	27	13	10	251	94	1,451	2.2
Business	94	45	6	1555	231	21,735	32.7
Communication Arts	12	6	5	3250	67	3,581	5.4
Education	2	1	16	90	53	106	.2
Engineering	52	25	10	1250	145	7,560	11.3
Health & Nursing	56	27	6	1631	127	7,116	10.7
Home Economics	18	8	6	300	42	761	1.1
Social Science	4	2	28	700	21	863	1.3
Technology	104	50	20	3500	210	21,817	32.8
				TOTAL		66,543	

As shown in this table, technical-institute curricula were offered under ten different departments. The top three departments, in descending order, that were most frequently reported as offering such curricula were technology with 104 responses, business with ninety-four and health and nursing with fifty-six. The smallest number of students enrolled under a single department was five, whereas the largest number of students pursuing technical-institute curricula under a single department was 3500. Two departments, business, with a total of 21,755 students reported, and technology, with 21,815, accounted for two-thirds of the total 66,542 students reported enrolled in technical-institute curricula offered under the ten departments shown in Table 11.

When the total 66,542 students reported were divided among the total 208 colleges reporting, the result was an average of 320 technical-institute students per institution. This figure, when projected to the 456 public junior colleges that existed in 1966, indicated that approximately 144,640 students were pursuing technical-institute curricula in the public junior colleges at that time. If only one-third, or some 48,000, of these were graduated per year this would be a substantial contribution to the estimated annual need of from 70,000 to 100,000 technicians during the last half of the 1960's and ahead.

Reported Percentage of Enrollment Engaged in Technical-institute Curricula

Table 12 shows data relating total enrollment to technical-institute enrollment in those institutions offering such curricula. Of the 147 respondents offering technical-institute curricula, forty-nine, or 33.3 per cent, revealed that enrollment in such curricula

accounted for less than 10 per cent of their total enrollment. A second group of sixty-eight, or 46.2 per cent, indicated that technical-institute students comprised from 10 to 25 per cent of their total enrollment. Only twenty, or 13.6 per cent, showed that students enrolled in technical-institute curricula accounted for 25 to 50 per cent of their total. Ten institutions, or 6.9 per cent, indicated that technical-institute students comprised from 90 to 100 per cent of their total enrollment.

TABLE 12

REPORTED PERCENTAGE OF ENROLLMENT ENGAGED IN TECHNICAL-INSTITUTE CURRICULA

	Number of institutions reporting technical curricula	Number reporting technical enrollment was less than 10% of total	Number reporting technical enrollment was from 10 to 25% of total	Number reporting technical enrollment was from 25 to 50% of total	Number reporting technical enrollment was from 90 to 100% of total
Number	147	49	68	20	10
Per cent of total	100	33.3	46.2	13.6	6.9

Nature of the Technical-institute Curricula Offered

As shown previously, 147 of the 208 institutions responding offered programs in the technical-institute field. A total of 1,039 curricula were reported under ten different occupational groups. The following ten tables present the data for each group.

Curricula Offered in Research, Design, and Development Occupations

Table 13 provides data related to the technical-institute curricula offered in this occupational group. A total of 257 curricula were reported in this occupational cluster. This accounted for 24.6 per cent of the total 1,039 curricula reported by the 147 institutions who provide such curricula.

Of the 257 curricula reported in this group only nine were one-year programs while 248 were two years in length. The curricula in all ten groups reported were divided into four major areas of study; namely, basic science, technical, non-technical, and mathematics. Table 13 shows the average percentages in these four areas for group one to be 12.1 per cent science, 54.5 per cent technical, 20.3 per cent non-technical and 13.1 per cent mathematics.

TABLE 13

GROUP ONE: CURRICULA OFFERED IN RESEARCH DESIGN, AND DEVELOPMENT OCCUPATIONS

Number of one-year curricula reported in this group	Number of two-year curricula reported in this group	Per cent this comprised of total curricula reported	Average per cent of the curricula in this group devoted to basic science courses	Average per cent of the curricula in this group devoted to technical specialty courses	Average per cent of the curricula in this group devoted to non-technical courses	Average per cent of the curricula in this group devoted to mathematics courses
9	248	24.6	12.1	54.5	20.3	13.1

Curricula Offered in Manufacturing Production Occupations

Table 14 shows data related to the technical-institute curricula reported under this occupational group. A total of fifty-eight curricula were reported in manufacturing production occupations. These curricula accounted for 5.6 per cent of the total curricula reported in all groups. Only two of the fifty-eight curricula reported for this group were one-year programs, while fifty-six were reported to be two-year programs.

Table 14 also shows that when the curricula offered in this group were divided into the four basic areas of study, an average of 13.4 per cent of these curricula were devoted to science, 55.5 per cent to technical specialty courses, 19.2 per cent to non-technical studies and 11.9 per cent were devoted to the study of mathematics.

TABLE 14

GROUP TWO: CURRICULA OFFERED IN MANUFACTURING PRODUCTION OCCUPATIONS

Number of one-year curricula reported in this group	Number of two-year curricula reported in this group	Per cent this comprised of total curricula reported	Average per cent of the curricula in this group devoted to basic science courses	Average per cent of the curricula in this group devoted to technical specialty courses	Average per cent of the curricula in this group devoted to non-technical courses	Average per cent of the curricula in this group devoted to mathematics courses
2	56	5.6	13.4	55.5	19.2	11.9

Curricula Offered in Construction and Installation Occupations

Table 15 presents data related to the technical-institute curricula offered in this occupational cluster. There were 102 curricula reported in construction and installation occupations. This number comprised 10 per cent of the total curricula for all groups. Six of the 102 curricula in this group were reported as being one-year programs, while ninety-six were classified as two-year programs of study

The division of the curricula in this group into the four areas of study, as shown in Table 15, reveals that an average of 11.3 per cent of the curricula are devoted to basic science, 57 per cent to technical courses, 20.2 per cent to non-technical courses and 11.5 per cent to mathematics.

TABLE 15

GROUP THREE: CURRICULA OFFERED IN CONSTRUCTION AND INSTALLATION OCCUPATIONS

Number of one-year curricula reported in this group	Number of two-year curricula reported in this group	Per cent this comprised of total curricula reported	Average per cent of the curricula in this group devoted to basic science courses	Average per cent of the curricula in this group devoted to technical specialty courses	Average per cent of the curricula in this group devoted to non-technical courses	Average per cent of the curricula in this group devoted to mathematics courses
6	96	10.0	11.3	57.0	20.2	11.5

Curricula Offered in Marketing Technical Products

Table 16 provides data related to the technical-institute curricula offered in this occupational group.

A total of sixty-two curricula were reported in occupations related to marketing technical products. This number accounted for 5.9 per cent of the total curricula in all groups. Of the sixty-two curricula reported in this group, three were one-year curricula, while the remaining fifty-nine were reported as two-year programs.

As shown in Table 16, when the curricula offered in this group were divided into the four basic areas, an average of 10 per cent of these curricula was devoted to basic science study, 59.5 per cent to technical specialty courses, 19.3 per cent to non-technical courses and 11.2 per cent was devoted to the study of mathematics.

TABLE 16

GROUP FOUR: CURRICULA OFFERED IN MARKETING TECHNICAL PRODUCTS

Number of one-year curricula reported in this group	Number of two-year curricula reported in this group	Per cent this comprised of total curricula reported	Average per cent of the curricula in this group devoted to basic science courses	Average per cent of the curricula in this group devoted to technical specialty courses	Average per cent of the curricula in this group devoted to non-technical courses	Average per cent of the curricula in this group devoted to mathematics courses
3	59	5.9	10.0	59.5	19.3	11.2

Curricula Offered in Operation and Control Occupations

Table 17 shows data related to the technical-institute curricula reported in this occupational cluster. Only twenty-five curricula were reported in operation and control occupations. Curricula offered in this group accounted for 2.4 per cent of the total number of curricula reported for all groups.

All curricula reported in this occupational group were classified under two-year programs. When the curricula offered in this occupational cluster were divided into the four groups shown in Table 17, the following percentages were established. In this occupational group an average of 17.1 per cent of the curricula were devoted to basic science studies, 55.5 per cent to technical studies, 13.4 per cent to non-technical courses and 14.0 per cent to mathematics.

TABLE 17

GROUP FIVE: CURRICULA OFFERED IN OPERATION AND CONTROL OCCUPATIONS

Number of one-year curricula reported in this group	Number of two-year curricula reported in this group	Per cent this comprised of total curricula reported	Average per cent of the curricula in this group devoted to basic science courses	Average per cent of the curricula in this group devoted to technical specialty courses	Average per cent of the curricula in this group devoted to non-technical courses	Average per cent of the curricula in this group devoted to mathematics courses
0	25	2.4	17.1	55.5	13.4	14.0

Curricula Offered in Maintenance and Inspection Occupations

Table 18 provides data related to the technical-institute curricula offered in this occupational group. A total of forty-nine curricula were reported in this occupational group. This number accounted for 4.7 per cent of the curricula in all occupational groups reported.

The curricula reported in this group were all classified as two-year programs.

In this occupational group an average of 11.9 per cent of all curricula were devoted to studies of the basic sciences. Studies in the area of technical specialty comprise an average of 57.5 per cent of these curricula. An average of 18.0 per cent of the curricula in this group was devoted to non-technical courses, while an average of 12.6 per cent was devoted to mathematics.

TABLE 18

GROUP SIX: CURRICULA OFFERED IN MAINTENANCE AND INSPECTION OCCUPATIONS

Number of one-year curricula reported in this group	Number of two-year curricula reported in this group	Per cent this comprised of total curricula reported	Average per cent of the curricula in this group devoted to basic science courses	Average per cent of the curricula in this group devoted to technical specialty courses	Average per cent of the curricula in this group devoted to non-technical courses	Average per cent of the curricula in this group devoted to mathematics courses
0	49	4.7	11.9	57.5	18.0	12.6

Curricula Offered in Medical and Health Service Occupations

Table 19 presents data related to the technical-institute curricula reported under this occupational grouping. There were 128 curricula reported under medical and health service occupations. This number comprises 12.3 per cent of the total curricula for all groups.

Nineteen of the 128 curricula in this group were reported as being one-year programs, while 109 were classified as two-year programs. The division of the curricula in this group into the four areas of study, as shown in Table 19, revealed that an average of 17.5 per cent of the curricula was devoted to basic science, 53.0 per cent to technical specialty courses, 22.3 per cent to non-technical courses and 7.2 per cent to mathematics.

TABLE 19

GROUP SEVEN: CURRICULA OFFERED IN MEDICAL AND HEALTH SERVICES OCCUPATIONS

Number of one-year curricula reported in this group	Number of two-year curricula reported in this group	Per cent this comprised of total curricula reported	Average per cent of the curricula in this group devoted to basic science courses	Average per cent of the curricula in this group devoted to technical specialty courses	Average per cent of the curricula in this group devoted to non-technical courses	Average per cent of the curricula in this group devoted to mathematics courses
19	109	12.3	17.5	53.0	22.3	7.2

Curricula Offered in Business and Commerce Occupations

Table 20 shows data related to the technical-institute curricula reported under this occupational group.

A total of 237 curricula were reported under business and commerce occupations. These curricula accounted for 22.8 per cent of the total curricula reported in all groups. Fourteen of the 237 curricula reported for this group were one-year programs, while 223 were reported to be two-year programs.

Table 20 also shows that when the curricula offered in this group were divided into the four basic areas of study, an average of 7.4 per cent of these curricula were devoted to science, 58.0 per cent to technical specialty courses, 24.5 per cent to non-technical studies and 10.1 per cent were devoted to the study of mathematics.

TABLE 20

GROUP EIGHT: CURRICULA OFFERED IN BUSINESS AND COMMERCE OCCUPATIONS

Number of one-year curricula reported in this group	Number of two-year curricula reported in this group	Per cent this comprised of total curricula reported	Average per cent of the curricula in this group devoted to basic science courses	Average per cent of the curricula in this group devoted to technical specialty courses	Average per cent of the curricula in this group devoted to non-technical courses	Average per cent of the curricula in this group devoted to mathematics courses
14	223	22.8	7.4	58.0	24.5	10.1

Curricula Offered in Agriculture Related Occupations

Table 21 presents data related to the technical-institute curricula offered in this occupational group.

A total of seventy-five curricula were reported in the agriculture-related occupations. This number accounted for 7.2 per cent of the curricula reported in all groups.

Of the seventy-five curricula reported in this group, only two were one year in length, while seventy-three were reported to be two years in duration.

In this occupational group an average of 13.7 per cent of the curricula were devoted to basic science studies. Studies in the area of technical specialty comprise an average of 56.5 per cent of these curricula, while 22.5 per cent and 7.3 per cent respectively were devoted to non-technical courses and mathematics.

TABLE 21

GROUP NINE: CURRICULA OFFERED IN AGRICULTURE RELATED OCCUPATIONS

Number of one-year curricula reported in this group	Number of two-year curricula reported in this group	Per cent this comprised of total curricula reported	Average per cent of the curricula in this group devoted to basic science courses	Average per cent of the curricula in this group devoted to technical specialty courses	Average per cent of the curricula in this group devoted to non-technical courses	Average per cent of the curricula in this group devoted to mathematics courses
2	73	7.2	13.7	56.5	22.5	7.3

Curricula Offered in Government Related Occupations

Table 22 shows data related to the technical-institute curricula reported in this occupational group. Forty-six curricula were reported to be offered in government related occupations. This number accounted for only 4.5 per cent of the total 1,039 curricula reported for all ten occupational groups.

All of the curricula reported for government related occupations were two years in length.

Table 22 also shows the following percentage when the curricula offered in this group were broken down into the four areas of study reported. An average of 10.7 per cent of these curricula was devoted to basic science, 57 per cent to technical specialty courses, 25.2 per cent to non-technical courses and 7.1 per cent to mathematics.

TABLE 22

GROUP TEN: CURRICULA OFFERED IN GOVERNMENT RELATED OCCUPATIONS

Number of one-year curricula reported in this group	Number of two-year curricula reported in this group	Per cent this comprised of total curricula reported	Average per cent of the curricula in this group devoted to basic science courses	Average per cent of the curricula in this group devoted to technical specialty courses	Average per cent of the curricula in this group devoted to non-technical courses	Average per cent of the curricula in this group devoted to mathematics
0	46	4.5	10.7	57.0	25.2	7.1

Increasing the Prestige of Technical-Institute Programs

Table 23 shows a list of practices related to increasing the prestige of technical-institute programs. The awarding of an associate degree, rather than a certificate or a diploma, was the most frequently

TABLE 23

PRACTICES RELATED TO THE PRESTIGE OF TECHNICAL-INSTITUTE PROGRAMS

Practices Reported	Number reporting practice	Per cent of total
Graduates of technical-institute programs were awarded an associate degree, usually an Associate of Science or an Associate of Applied Science.	105	71.5
Graduates of technical-institute programs were awarded some type of Certificate	23	15.6
Graduates of technical-institute programs received a diploma.	19	12.9
Graduates of technical-institute programs participated in regular commencement exercises.	129	87.7
Graduates of technical-institute programs had special commencement exercises.	18	12.2
Some faculty members taught courses in both transfer and technical-institute programs.	88	60.0
Institution provided placement services for all technical-institute graduates.	112	76.2
Institution had obtained accreditation for some technical-institute curricula by special agencies such as the Engineers Council for Professional Development and the American Association of Collegiate Schools of Business.	26	17.7

reported recognition given to graduates of technical-institute curricula. This practice of recognition was indicated by 105, or 71.5 per cent, of the institutions reporting.

Of the 147 institutions reporting, 129, or 87.7 per cent, indicated that technical-institute graduates participated in regular commencement exercises; and 112, or 76.2 per cent, of those reporting provided their technical-institute students with placement services.

It is also shown in Table 23 that twenty-six, or 17.7 per cent, of the institutions reporting had technical-institute curricula that were accredited by professionally associated agencies in the field to which the curricula were related. Such accreditation would seem desirable in providing standards not as closely covered by regional accrediting associations and at the same time increase the prestige of the programs and their graduates.

Financial Support For Technical-institute Curricula

Tables 24 and 25 show data related to this area of inquiry. Table 24 shows the number and per cent of the institutions reporting the use of various sources of local, state, and federal taxes to support the technical-institute curricula they offered.

Of the 147 institutions reporting such programs, 121, or 82.3 per cent, used some local tax money; but only two indicate they used local tax money exclusively, while thirteen, or 8.8 per cent, reported they used no local tax money to finance their technical-institute programs.

Also, as may be seen in Table 24, 119 institutions, or 81.0 per cent, used some state tax money to support technical-institute programs, while 83, or 56.5 per cent, used some federal tax money. Institutions were asked if they would prefer not to accept federal aid in this area. Only one institution reported such a preference, and yet only 56.5 per cent were taking advantage of this source of financial assistance. This would appear to be an inconsistency worthy of further investigation.

Table 25 shows percentage figures related to financial reimbursement from state and federal sources. In both cases wide differences between states and institutions were indicated. Some institutions received support for their technical-institute programs ranging from 10 to 100 per cent from state financial aid, with the same condition exist-

TABLE 24

SOURCES OF FINANCIAL SUPPORT FOR TECHNICAL-INSTITUTE CURRICULA

Sources Reported	Number of times reported	Per cent of total
Local taxes were used exclusively to support technical-institute programs.	2	1.3
No local tax money was used to support technical-institute programs.	13	8.8
Some local tax money was used to support technical-institute programs.	121	82.3
Some state tax money was used to support technical-institute programs.	119	81.0
Some federal tax money was used to support technical-institute programs.	83	56.5

ing in other institutions with regard to federal financial aid. For those institutions reporting, an average of 36.6 per cent of the cost of such programs was borne by the states, while an average of 25.7 per cent was borne by federal support.

TABLE 25

FINANCIAL REIMBURSEMENT FROM STATE AND FEDERAL AID TO TECHNICAL EDUCATION

Number reporting who were receiving state aid	Per cent range of state aid reported	Average per cent of state aid reported	Number reporting who were receiving federal aid	Per cent range of federal aid reported	Average per cent of federal aid received
119	10 to 100	36.6	83	3 to 100	25.7

SUMMARY AND CONCLUSIONS

Summary

This study was concerned with the collection and correlation of information reflecting the background, status and need of technical-institute programs of education in the public junior college. The more significant findings in the opinion of the investigator are presented below.

With relation to historical circumstances affecting technical education in America, a study of the literature revealed the following information pertinent to an understanding of present conditions.

Historically, vocational and technical education has struggled for a role in the American educational system commensurate with its importance in America's industrialized society. Its failure to achieve such a role could be explained only by an understanding of the historical circumstances that had surrounded the development of America's education system.

Technological and international developments of recent decades had greatly intensified an awareness of the shortcomings of the educational system in the areas of vocational and technical education. In the area of technical education one type of program for training highly skilled technicians had existed for many years. This was the technical-institute type of program. These programs were well proven and offered the best examples available for training to meet the critical demand for technical manpower.

Of the educational institutions within the main system of American public education, the public junior college seemed to hold the greatest potential for the expansion of technical-institute programs of education.

In this regard a survey of the public junior colleges revealed that, of the institutions responding, 70.7 per cent offered technical-institute curricula in 1966. This percentage was based on a 52 per cent return of the 400 survey forms used in this study. From the data supplied it was determined that the number of public junior colleges offering such curricula had increased 134 per cent in the decade from 1956 to 1966. In this same period there had been an increase of approximately 45 per cent in the number of public junior, or community, colleges.

The demand of an increasingly complex industrial society for better educated and more highly skilled manpower was the foundation on which the expansion in this field was based. This was indicated by the ranking of the factors affecting the development of such programs in the reporting institutions. The three factors most frequently cited by the respondents, interest of industry, interest of students and state or federal financial aid, clearly reflect the fundamental requirements for the development of any educational program. That is (1) the need of society for some particular type of training (2) a sufficient number of individuals interested in securing this type of training and (3) the necessary financial, or material, support to organize a program of instruction.

With regard to some of the difficulties encountered in technical-institute programs in the public junior colleges, the problem most frequently cited was the lack of effective vocational counseling. Closely associated with this difficulty was the general lack of understanding of the technical-institute program, as a distinct type of education, on the part of parents and the general public.

Loss of credit in the event of transfer to other curricula was another major difficulty reported. It appeared that the junior colleges were making some progress in eliminating this handicap but much remained to be accomplished here. Only sixteen of the 147 institutions reported none of the credits earned in technical-institute curricula were transferable to other curricula, while seventeen indicated that all such credits were transferable to related fields. These two groups combined, however, accounted for only 10.9 and 11.5 per cent respectively of the total responses. The rest allowed varying combinations of partial credit to be transferred to other curricula.

Efforts to keep curricula correlated with employment needs were substantial. Approximately three-fourths of the colleges maintained advisory committees on curricula needs, conducted occupational surveys, and consulted with representatives of industry.

The need for general education as a part of technical-institute curricula was evidently felt rather strongly by the junior college, as approximately 90 per cent of the institutions reporting indicated that general education comprised about one-fourth of their technical-institute curricula.

Junior colleges in general, and in the technical-institute field

particularly, were making an outstanding contribution toward improving the respectability of post-secondary educational programs other than the traditional four-year baccalaureate degree programs. Seventy-one per cent awarded associate degrees to technical-institute graduates and in most other ways extended such students the same privileges and status as transfer students. Seventy-six per cent also provided placement services for technical-institute students. Only nineteen institutions, or 12.9 per cent, offered one or more technical-institute curricula on a cooperative education plan. Cooperative education in this field would seem to provide a logical and desirable approach. Why it has not received wider application poses a question for further study, particularly since the number one factor contributing to the development of technical-institute programs was reported to be the interest of industry.

Financial support held an especially prominent place in this field due to the high cost per student in providing technical-institute programs. Eighty-two per cent of the institutions used some local tax money and eighty-one per cent used some state money. Only fifty-six per cent, however, used federal aid in this area.

One outstanding point in regard to the nature of the curricula was the wide range of occupational fields in which technical-institute curricula were offered. This would seem to indicate that the public junior college had accepted the technical-institute as a type of education applicable to many semiprofessional fields rather than just to the engineering field in which it had initially developed.

Conclusions

Industrialization in America is still increasing. The traditional sources for highly skilled manpower are decreasing, while the demand for such training is greatly expanding. Thus the schools are increasingly being relied upon to provide technical efficiency.

The growth of technical-institute curricula in the public junior college, as revealed by this study, would tend to substantiate the conclusion not only that these institutions are accepting the challenge of providing this type of training but also that they are rapidly moving toward becoming one of the primary sources of technical education on the post secondary level.

The need of industry for technicians is increasing as is the number of students seeking higher education in all fields. Technical-institute education had received wider acceptance as a part of the public junior college from 1956 to 1966 and the conditions which promoted this development seem certain to remain and expand from 1966 to 1976 and ahead. It thus seems safe to conclude that the technical-institute program as part of the public junior college will continue its unprecedented growth in the next decade and beyond.

On the educational scene the technical-institute as a type of education is increasingly establishing a clearer identity for itself; but in the eyes of the average student and the lay public, much information and understanding of this relatively new area of education is greatly needed.

Both the amount and quality of general education in technical-institute curricula has increased as it has become an important part of

the junior college movement. This is a point of concern among technical-institute advocates, who voice the caution that general education, while highly desirable, must not be allowed to subtract from the development of salable skills if the technical-institute is to develop a distinctive role for itself and fulfill the needs for which it is primarily designed.

There are indications that technical training has arrived at a point where the needs of technological development can be more nearly met by an increased emphasis on technical-institute types of education. There are many elements of strength to support this development within the framework of the public junior colleges; and, as revealed by this study, much of this type development was taking place in these institutions.

No basic problems seem destined to prevent the development of the technical-institute type programs as a part of the public junior college. How fast this type of training will develop depends upon the acceptance of its potential contribution to the economic achievement of graduates and their employers.